

FIRST QUANTUM MINERALS LTD.

Cobre Panamá

Maintenance Work Order / Orden de Trabajo de Mantenimiento			
Work Order No. / No. Orden Trabajo	1011148 WM		Original Copy
Start Date / Fecha Inicio	27/01/23	**Priority / Prioridad**	3
Counter Reading / Lectura Medidor		**WO Type / Tipo Orden**	PM Orders
Category Code / Código Categoría	-. 068-Pump -. Maintenance Equipment SD / Island OP	**Status / Estado**	WO Issued & Released
		Supervisor	Proc Wet Utilities Supvsr

Asset General Information. / Información General Activo	
Asset No. / No. Activo	383-PP-9201
Manufacturer / Fabricante	Krebs
Model Desc. / Desc. Modelo	Pump Cyclone Feed Lime Mill 01 Lime Area
P&ID	P&ID
Parent / Padre	383-PP-9000 Pumps Lime Area
Warranty / Garantia	NO

Description of problem in Work Request. / Descripción del Problema	
1.	13W Inspect Wet End & Belts

Work Order Parts / Lista de Partes				
JDE Number / Número JDE	**Spare Description / Descripción de la Parte**	**Op No./No.O2**	**Qty / Cant.**	**Unit / Unidad**

Equipment and Instructions / Equipo e Instrucciones	
	13W Inspect Wet End & Belts
	13W Inspect Wet End & Belts

Tooling / Herramientas			
JDE Number / Número JDE	**Spare Description / Descripción de la Parte**	**Qty / Cant.**	**Unit / Unidad**

Labor Allocated / Descripción Mano Obra			
Crew Size / No. Personas	**Work Center / Centro de Trabajo**	**OPS / Sec. Op**	**Est. Hours / Horas Est.**
3	LINT Industrial Technician	10.00	24.00

Timesheet / Hoja de Tiempo				
Employee JDE Code / Código JDE Empleado	**Name / Nombre**	**Initial / Iniciales**	**OPS / Sec. Op**	**Act. Hours /H. Actual**
41508	Ricardo Robles	R.R	10:00	5:00
57607	Marcos Perez	M.P	10:00	5:00
58671	Jose Zárate	J.Z.	10.00	4.00

Supervisor Name / Nombre Supervisor:

Supervisor Signature / Firma Supervisor:

Printed / Impreso: 20/01/23

Complete values / Completa estos valores:	
Actual Start Date of Job / Fecha Real de Inicio de Trabajo	27/1/2023
Actual Start Time of Job / Hora Real de Inicio de Trabajo	1:00 P.m
Actual Finish Date of Job / Fecha Real de Termino de Trabajo	28/1/2023
Actual Finish Time of Job / Hora Real de Termino de Trabajo	12:00 am.

Failure / Falla	N/A
Analysis / Análisis	N/A
Solution / Solución	N/A.

Comments / Comentarios

383-PP-9201 Ultimos parámetros:

47.9 amperios

86.1% Velocidad.

50.6 m^3/h.

383-PP-9201 desacople de las bomba limpieza interna y externa revisión del impeler

WO Raised by: / Orden Creada por:	**MINERA PANAMA S.A.**
WO Raised Date: / Fecha Creacion Orden:	**27/12/2022**
Work Completed by: / Trabajo Completado por:	Jose Zarate
Supervisor Review: / Revision del Supervisor:	
Date Completed / Fecha completada:	28/1/2023.

Supervisor Name / Nombre Supervisor:

Supervisor Signature / Firma Supervisor:

FIRST QUANTUM MINERALS LTD. Minera Panamá

TASK / TAREA	13W inspect Horizontal pump Wet end & Belt .	90D330M000_02

PURPOSE / PROPOSITO:	*To Safely carry out the Mechanical requirements of the Process Plant in a systematic and orderly manner.*
SCOPE / ALCANCE:	*This work instruction is part of an approved maintenance strategy that has been developed to maintain the plant reliability. horizontal Pump is carry out to Mechanical Inspect the performance to sustain the efficiency of the plant operation.*

PREREQUISITES / PRE-REQUISITOS

People Required / Personal Requerido	PPE / EPP	Tools & Equipment / Herramientas y Equipos	Competency / Competencia
02 Industrial Technician/ Técnico Industrial	*Standard PPE*/Epp estandar	*Pieces Of Rags* / Trapo Industrial	*Trained in the task to perform the procedure*
01 Operator/ operator	*Gloves*/Guantes	*Degreaser / Solvent /* Desengrasante	Personal entrenado para la tarea
	*Ear Plugs/*Tapones de oido	*Mechanical Tool Kit/ kit de herramientas Mecánicas*	
	Follow JSEA PPE stated for each task	Tensiometer / Groove pulley gauge / Pulley laser alignment	

WARNING! / PELIGRO

Most equipment will be operating, be aware of the inherent dangers, i.e. no loose clothing, wear gloves where appropriate. Some of these checks include touching equipment to feel for vibration, if it is not safe to do so, DO NOT DO IT.

La mayoría de los equipos están en operación, tener precaución de los peligros inherentes, etc. ropa suelta, utilizar lentes de seguridad apropiados. Algunos de estos chequeos incluyen tocar equipos para sentir vibración, si no es seguro hacer esto, NO LO HAGA.

PM CONDITION CODES / CODIGOS CONDICION DEL PM

1	***Poor Condition*** / **Condicion Pobre**	*Needs Urgent Attention* / Necesita atencion Urgente
2	***Average Condition*** / **Condicion Promedio**	*May Require Attention* / Podria Requerir Atencion
3	***Serviceable Condition*** / **Condicion operativa**	*Requires No Attention* / No Requiere atencion

APPROVAL CONTROLLED DETAIL.	DOCUMENT STATUS:			
PREPARED BY: Jhonatan Lorenzo	REVISION	1	ISSUE DATE:	16/10/2019
APPROVED BY:	REVIEW DATE:			
APPROVER'S SIGNITURE: ____________	DOCUMENT NAME: **13W inspect Horizontal pump Wet end & Belt**			

PREPARATION ACTIVITIES / ACTIVIDADES PREVIAS
❑ *Team group discussion (5 minutes-on hazards).* / Charla grupal (5 minutos –riesgos y peligros)
❑ *Prepare the lock out and tag out* / Prepare el bloqueo y etiquetado
❑ Perform the field risk analysis / Realizar un análisis de riesgo de campo.
DETAILED INSTRUCTIONS

	INSRUCTIONS	**DONE**
	Wet End Inspection	
1	Fill safety documents as risk assessments and LOTO documentation.	3
2	Lock on the equipment you will work with.	3
3	After the LOTO is apply ask the operator to start the equipment if it start review the LOTO if it doesn't you can start to carry out the tasks .	3
4	Remove the suction spool, Front casing and Impeller.	3
5	Mark throat bush in the actual position remove it and inspect it before install it rotate it 90 degree Clockwise, for FL smith krebs pump inspect and rotate the wear ring as described before for the throat bush .	3
6	Inspect impeller, frame liner and cover liner for excessive wear, tear, crack or holes .	3
7	Re-install impeller, cover liner with throat bush and the cover .	3
8	Tight casing bolts and install suction spool.	3
	Note: If a defect is found write the defect at the defect sheet.and notify the supervisor to rise a work request	3
	Belt Transmission Inspection	
10	After the pump is installed take out the belt guard and belts.	3
11	Clean the pulley groove, With a groove gauge measure the wear of the groove, report any excessive wear if it is necessary , see the condition of the pulley to see any crack on them.	3
12	With a laser alignment or a rule verify if the pulleys are in the Correct alignment range if not rectify.	3
13	Inspect the belts condition before install them to see any crack or damage on them .	3
14	After the belts are installed verify the correct tension of the belts can see the document 90D000M000_02 to see the procedure	3
15	Finally install the guards.	3

Note 1:* *If the task doesn't apply for the equipment fill the grill with "N/A.

Note 2: If a defect is found write the defect at the defect sheet and notify the supervisor to rise a work request.

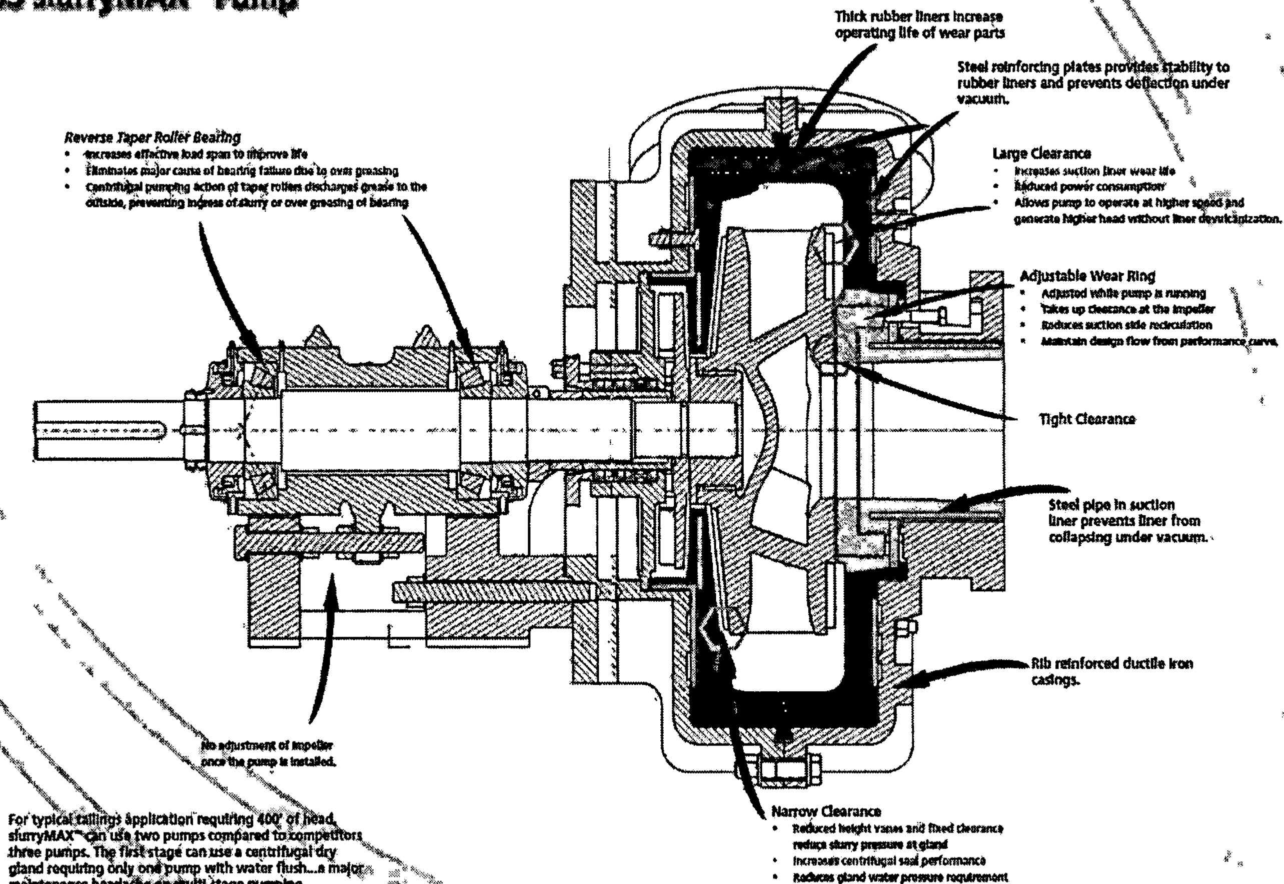
Wet End Picture

Disassembly slurry centrifugal pump

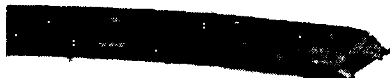
Gland seal

Warman Pump assembly

KREBS slurryMAX™ Pump



BeltsTransmission Picture



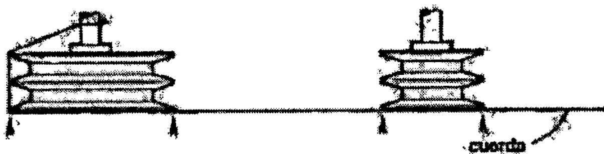
Wear on top corner of belt



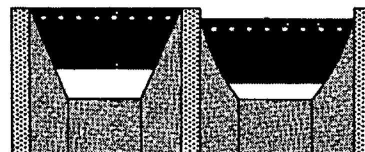
Wear on botton surface of belt



Cracked Bottom



Correct alignment of pull.



Excessive wear.



Groove gauge.

Item	*Code /*	*Fault Description / Recommended Action / Work Order Generation*	*W/O*
ITEM	**Código**	**Descripción de la Falla / Acción Recomendada / Generación de Orden de Trabajo**	**O/T**

Item	*Code*	*Repairs and Adjustments Carried Out / Completed*	*W/O*
ITEM	**Código**	**Reparación o ajuste llevado a cabo / Completado**	**OT**

Completed by	José Zárate A.
Signature	[signature]
Dated	28/1/2023.

Supervisor	[signature]
Signature	
Dated	28/1/23

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Work Scope / Ambito de trabajo: ☑ Mechanical / Mecanico ☐ Electrical / Electrico ☐ Others / Otros: .... Date: 27/1/23

383-PP-9201 Limpieza inspección de las partes húmedas

Author / Autor	Authorizing Supervisor / Supervisor Autorizante	Permit Holder / Titular del Permiso
Name/Nombre: Ricardo Robles (Print / Imprenta)	Name/Nombre: (Print / Imprenta)	Name/Nombre: Marcos Pérez (Print / Imprenta)
Sign/Firma: Ricardo Robles	Sign/Firma: [signature]	Sign/Firma: [signature]

Task Steps / Pasos a Realizar	Hazard / Peligro	Who is at Risk / Quién está en riesgo?	Level of Risk / Niveles de Riesgo L LOW	M Medium	H HIGH	Control Measures to be taken to reduce risk level to low / Medidas de Control tomadas para reducer el nivel de riesgo	Controlled level of Risk / Nivel de Riesgo Controlado L LOW	M Medium	H HIGH
Translado de personal y herramientas	choque / vuelco				/	utilizar la licencia adecuada para el manejo.	/		
medición del área de trabajo remoción de lote	resbalón / Tropiezo				/	usar las herramientas correctas para la tarea.	/		
Se procede a desacople de la bomba inspección	machucón / golpe				/	usar los E.P.P. adecuados para la tarea	/		
interna, tensión de los conecas, alineamiento	riesgo con / cortes			/		Personal idóneo para realizar la tarea	/		
de los poles rotación de impeler.	Factor climático			/		Llamar al canal 1 ó 294-5911 por emergencia	/		
Dejar el equipo acoplado listo para operar	golpe de calor / Ruido			/		Dejar el equipo acoplado y limpio listo para operar	/		

THINK: Attention on the Prevention of Serious Accidents

First Safety – First Quantum

Acknowledgement of Receipt & Acceptance / Acuse de Recibo y Aceptación					
Print Name / Nombre en letra de Imprenta	**Signature / Firma**	**Date / Fecha**	**Print Name / Nombre en letra de Imprenta**	**Signature / Firma**	**Date / Fecha**
Ricardo Robles	R- Robles	27/1/23			
Marcos Pérez	MP	27-1-23			
José Zarate A	[illegible]	27/1/23.			

THINK: Attention on the Prevention of Serious Accidents

First Safety – First Quantum

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